KPM

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APPLICATION BRIEF

Environmental Fresh Water Testing

Environmental fresh water testing is critically important in protecting public health to preserving our environment. Poor water quality can lead to serious health problems for human and animal populations, as well as significant disruptions to aquatic ecosystems. Additionally, fresh water is a precious and limited resource essential for agriculture, industry, and human consumption.

Regular testing ensures compliance with stringent legal standards and helps prevent pollution risks. A combination of nutrient and contaminant testing ensures the water is safe and free from man-made or naturally occurring contaminants.

KEY ANALYTES

Among the available methods for analyzing water quality, discrete, continuous flow, and segmented flow analyzers stand out for their efficiency and accuracy. These instruments are well suited for analyzing essential analytes for fresh water quality, including:

- **pH** is a fundamental measure of the acidity or alkalinity of water. Extreme pH levels can be harmful to aquatic life, affecting the biological processes of aquatic organisms. Electrical conductivity is another crucial parameter, indicating the presence of dissolved salts in water. It is measured to assess the salinity and ionic composition of water, which are essential factors for the health of aquatic ecosystems.
- **Nitrogen coumpounds**, including **ammonia**, **nitrates and nitrites** are important indicators of agricultural pollution, often related to the use of fertilizers. High concentrations of these compounds can be toxic, particularly to infants and aquatic life.
- **Phosphates**, also associated with agricultural and industrial activities, can cause excessive algal growth, leading to eutrophication* phenomena that disrupt aquatic ecosystems.
- Analytes that require pretreatment extraction, such as **Total Phosphorus** (**TP**), **Total Nitrogen** (**TN**), cyanides, and the **phenol index**, are usually analyzed using segmented flow or flow injection analyzers.

Aldehyde	Formaldehyde	Phenol Index
Alkalinity (BPB)	Formic Acid	Phosphate
Alkalinity (Methyl Orange)	Free Chlorine	Polyacrylamide
Aluminium	Hardness	Potassium
Ammonia	Hydrazine	ORP (EC Module)
Boron	Iron	Silicates
Bromide	Magnesium	Sodium
Calcium	Manganese	Sulfide
Chloride	MBAS	Sulphates
Chromium VI	Molybdenum	TKN
Color Index	Nitrates (Cadmium coil)	TN
Conductivity (EC Module)	Nitrates (Hydrazine)	TP
Copper	Nitrates (Vanadium)	Urea
Cyanide	Nitrite	Zinc
Fluoride	pH (EC Module)	



Other analytes, such as **chromium**, **sulfates**, and **chlorides**, which require no pretreatment other than filtration or where extraction pretreatment is performed offline, can be easily analyzed with discrete analyzers. Additional techniques used in testing these water bodies include titration, ion selective electrode, atomic absorption, ICP-OES, UV-Vis spectrophotometry, and ion chromatography.

The typical ranges for each analyte can vary based on factors such as the type of matrix, location, and regulatory requirements. For example, contaminant analytes like phenols and cyanides are usually tested in the ppb range due to their toxic nature and low acceptable limits, while other analytes, such as nitrate and Total Kjeldahl Nitrogen (TKN), are typically tested in the ppm range because they are more commonly found at higher concentrations.

KPM TAILORED ANALYTICAL SOLUTIONS FOR YOUR LABORATORY NEEDS

The discrete wet chemistry analyzer SmartChem® and the continuous segmented flow analysis platform NexaFlo® from KPM Analytics can conduct these tests with great precision and speed, enabling effective and regular monitoring of water quality. These technologies offer significant advantages in terms of sensitivity, accuracy, and the ability to process a large number of samples in an automated manner.

Conducting a comprehensive analysis of your laboratory's requirements is essential for selecting the most suitable testing equipment. By thoroughly understanding your specific needs, KPM Analytics can recommend the best solution and provide you with optimal support throughout the entire process This tailored approach ensures that your laboratory achieves accurate and reliable results, meeting all necessary standards and regulations.

**eutrophication: process by which water becomes progressively enriched with nutrients, particularly phosphorus and nitrogen.*

WET CHEMISTRY SOLUTIONS FROM KPM ANALYTICS



SmartChem® 800 **SmartChem® 450**

The SmartChem® Series Discrete Analyzer is a wet chemistry platform for automated photometric and electrochemical analysis.



SmartChem® 210 **SmartChem® 200**



NexaFlo®

The NexaFlo® is an automatic Segmented Flow Analyzer that automates the sample preparation process and revolutionizes laboratory workflows.

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